FURUNO

# OPERATOR'S MANUAL

## REMOTE DEPTH INDICATOR

MODEL ED-2200

FURUNO ELECTRIC CO., LTD.
NISHINOMIYA, JAPAN

9-52, Ashihara-cho,
Nishinomiya, Japan 662

Telephone: 0798-65-2111
Cable: FURUNO NISHINOMIYA
Telex: 5644-325/326 FURUNO J
Telefax: 0798-65-4200 (GIII)



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(KAKI) ED-2200

• Your Local Agent/Dealer

Initial Version: Oct. 1991
Version D: Feb. 7, 1996

*00080296200*

# ⚠ SAFETY INSTRUCTIONS

"**DANGER**", "**WARNING**" and "**CAUTION**" notices appear throughout this manual. It is the responsibility of the operator and installer of the equipment to read, understand and follow these notices. If you have any questions regarding these safety instructions, please contact a FURUNO agent or dealer.

| | |
|---|---|
| ⚠ **DANGER** | This notice indicates a potentially hazardous situation which, if not avoided, will result in death or serious injury. |
| ⚠ **WARNING** | This notice indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. |
| ⚠ **CAUTION** | This notice indicates apotentially hazardous situation which, if not avoided, could result in minor or moderate injury, or property damage. |

# SAFETY INFORMATION FOR THE OPERATOR

## WARNING



**Do not open the cover of the equipment.**

This equipment uses high voltage electricity which can shock, burn, or cause death. Only qualified personnel should work inside the equipment.

**Do not dissasemble or modify the equipment.**

Fire, electrical shock or serious injury can result.

**Immediately turn off the power at the ship's mains switchboard if water or foreign object falls into the equipment or the equipment is emitting smoke or fire.**

Continued use of the equipment can cause fire, electrical shock or serious injury.

## CAUTION

**Do not place liquid-filled containers on the top of the equipment.**

Fire or electrical shock can result if a liquid spills into the equipment.

**Do not place heater near the equipment.**

Heat can melt the power cord, which can result in fire or electrical shock.

**Do not operate the unit with wet hands.**

Electrical shock can result.

**Use the correct fuse.**

Use of the wrong fuse can cause fire or equipment damage.

# SAFETY INFORMATION FOR THE INSTALLER

## WARNING



**Only qualified personnel should work inside the equipment.**

This equipment uses high voltage electricity which can shock, burn, or cause death.

**Turn off the power at the ship's mains switchboard before beginning the installation. Post a warning sign near the switchboard to ensure that the power will not be applied while the equipment is being installed.**

Serious injury or death can result if the power is not turned off, or is applied while the equipment is being installed.

## CAUTION



**Ground the equipment to prevent electrical shock and mutual interference.**

Ungrounded equipment can give off or receive electro-magnetic interference or cause electrical shock.

**Confirm that the power supply voltage is compatible with the voltage rating of the equipment.**

Connection to the wrong power supply can cause fire or equipment damage. The voltage rating appears on the label at the rear of the equipment.

# CONTENTS

# 1. FOREWORD

Congratulations on your choice of the FURUNO ED-2200 Remote Depth Indicator! We are confident that you will enjoy many years of operation with this fine piece of equipment.

For over 40 years FURUNO Electric Company has enjoyed an enviable reputation for quality and reliability throughout the world. This dedication to excellence is furthered by our extensive global network of agents and dealers.

The ED-2200 is the newest addition to FURUNO's navigational and color video sounders family. This new remote depth Indicator repeats the depth indication of Digital Depth Indicator ED-222 or color video sounder. It's light-weight and compact size make it suitable for any size vessel.

We would appreciate feedback from you, the end-user, about whether we are achieving our purposes.

Thank you for considering and purchasing FURUNO equipment.

## FEATURES

- Compact cabinet can be mounted on a tabletop or in an instrument panel.
- Clear 3-digit readouts with 0.1 resolution in meters, fathoms or feet.
- Audible alarm sounds on waters shallower than a preset depth.
- Depth and alarm data output in FURUNO CIF or NMEA0183.

# 2. DESCRIPTION OF CONTROLS

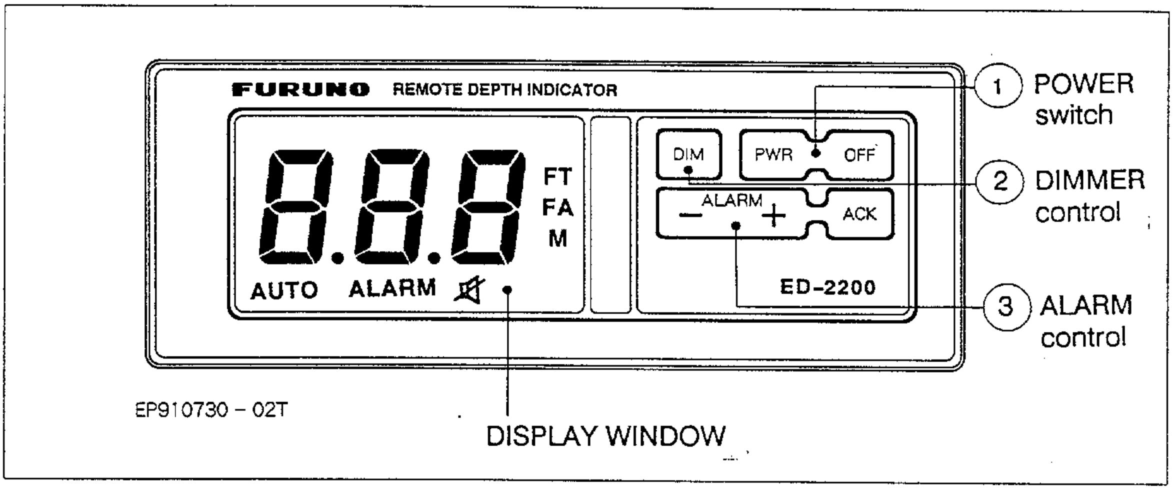



**Fig.2-1 Control Panel**

### 1 POWER Switch

The **POWER** switch turns the equipment on and off.
Press **PWR** to turn on the equipment.
Press **PWR** and **OFF** simultaneously to turn off the equipment.

TIP!

1. The external breaker switch can turn on/off the ED-2200.
2. The digital depth indicator ED-222 can turn on/off the ED-2200 if +5V line of ED-222 is connected to ED-2200. In this case, the PWR and OFF switches are disabled.

Change jumper block setting on the SUB board to select 1 or 2. See page 10.

### 2 DIMMER Control

The **DIM** key adjusts the brilliance of the keyboard and display in the following sequence.

Dim ←—— ——→ Bright

→ d-1 → d-2 → d-3 → ... → d-6 → (back to d-1)

If the DIMMER unit is connected to the ED-2200, **DIM** key function is disabled.

### 3 ALARM Control

The alarm sounds when the seabed goes shallower than the specified depth (shallow alarm mode). In waters where the depth is known to dramatically and suddenly rise without warning, it may be a good idea to turn on the depth alarm.

### Alarm zone setting

1. Press **ALARM [+]** or **[ - ]** to set the alarm zone. The depth window indicates the alarm setting depth. The window restores the depth indication about five seconds after terminating the setting. The alarm sounds if the ship enters waters shallower than the preset depth.

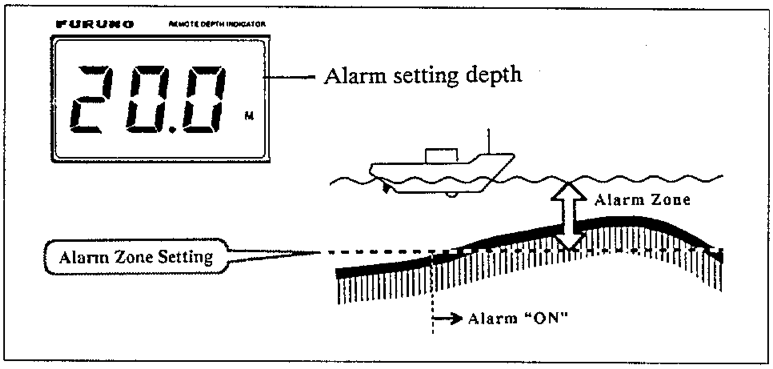



**Fig.2-2 Alarm zone setting**

TIP!

1. Set the alarm setting depth to "0" to disable the alarm. (The indication "ALARM" goes off.)
2. There are two alarm operation modes, LOCAL and REMOTE. (See page 10.) The alarm zone setting can be made in only the LOCAL operation mode.

### Alarm OFF

Press **ACK** key to stop the audible alarm. [ ] appears.

TIP!

The alarm restores itself automatically when the depth goes deeper than the preset depth and again goes shallower than the preset depth.

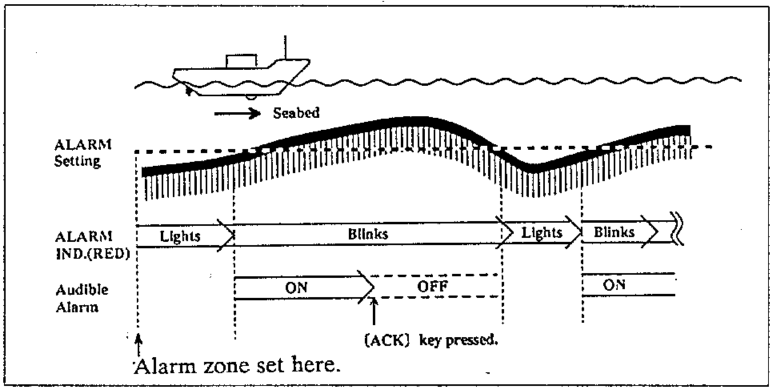



**Fig.2-3 Alarm Operation**

* Remarks for setting Alarm Zone in [LOCAL] (independent) operation mode.

| | [DRAFT ADJUSTED] of digital depth indicator ED-222 | |
|---|---|---|
| | Does not light | Lights |
| ED-2200 Alarm Zone Setting | Set the depth from the ship's hull (transducer). | Set the depth from the sea surface. |

Remember that the alarm zone differs with the DRAFT setting on ED-222.

# 3. READING THE DISPLAY WINDOW

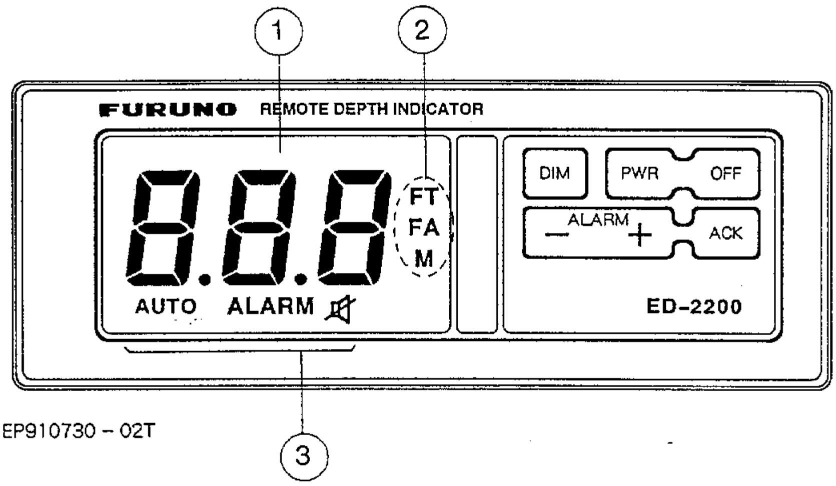



Fig.3-1 Display Window

| | Display Item | Description | | |
|---|---|---|---|---|
| ① | Depth | The seabed depth*. Depth appears in increments of 0.1; above 100 in 1 unit steps. | | |
| ② | Depth Unit | To change the depth unit, see page 9. | | |
| ③ | ALARM | The indication "ALARM" appears when the alarm zone is set. When the alarm condition is violated, the buzzer sounds. The condition to activate the alarm is; | | |
| | | If ED-2200 is combined with... | And setting of J3 on MAIN board is... | Then alarm sounds... |
| | | ED-222 or Color Video Sounder | LOCAL | When the seabed goes shallower than the preset depth. |
| | | ED-222 | REMOTE** | When the ED-222 outputs the alarm signal. |
| | | Color Video Sounder | | When the color video sounder outputs the bottom alarm signal. |

* The depth indication differs by the setting of the draft control of ED-222 or color video sounder. If the draft is;
not adjusted. ⟶ Depth is obtained from the ship's hull (transducer).
adjusted. ⟶ Depth is obtained from the sea surface.

** The indication "AUTO ALARM" appears on the window.

# 4. OPERATING PROCEDURE

1. Turn the ED-2200 on. The depth appears in the display window.

2. Adjust the brilliance by the **DIM** key (or by the control knob on the Dimmer Unit), if necessary.

3. Set the alarm zone by the **ALARM** [+] or [-] key. The alarm sounds when the ship enters waters shallower than the preset alarm zone.

TIP!

This alarm zone setting functions in LOCAL operation mode only.
Refer to page 10.

# 5. INSTALLATION

## Mounting Site

The ED-2200 may be mounted in the following methods.

(a) Tabletop Mount
(b) Overhead Mount
(c) Flush Mount

Necessary Considerations

* A dry and well-ventilated place.
* Vibration free place
* A place shaded from direct sunlight.
* A place not exposed to rain or watersplash.

## Mounting Method

Tabletop, Overhead and Bulkhead

(1) Use the hanger as a template to mark two fixing holes (inner one pair or outer one pair) on the table, overhead or bulkhead.
(2) Fix the hanger by two self-tapping screws.
(3) Set the remote display unit to the hanger and tighten the knob bolts. Do not forget to place the rubber washer between the unit and the hanger.

Flush Mount

(1) Make a hole in the mounting location as shown in Fig.5-1.

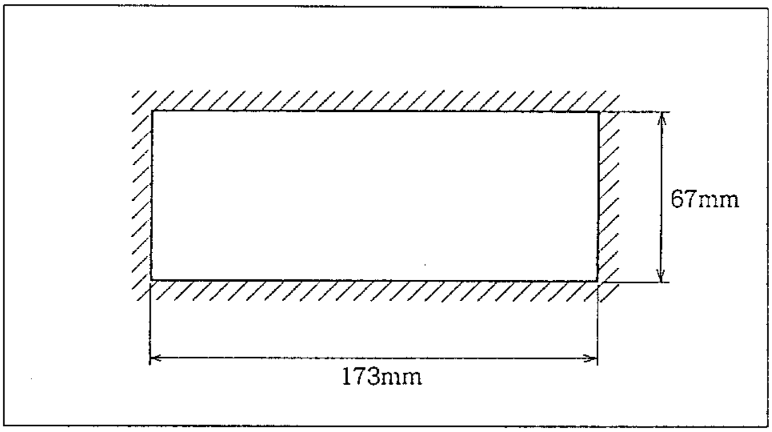



Fig.5-1

(2) Fit the two pieces of flush mount plates into the slots on the display unit.

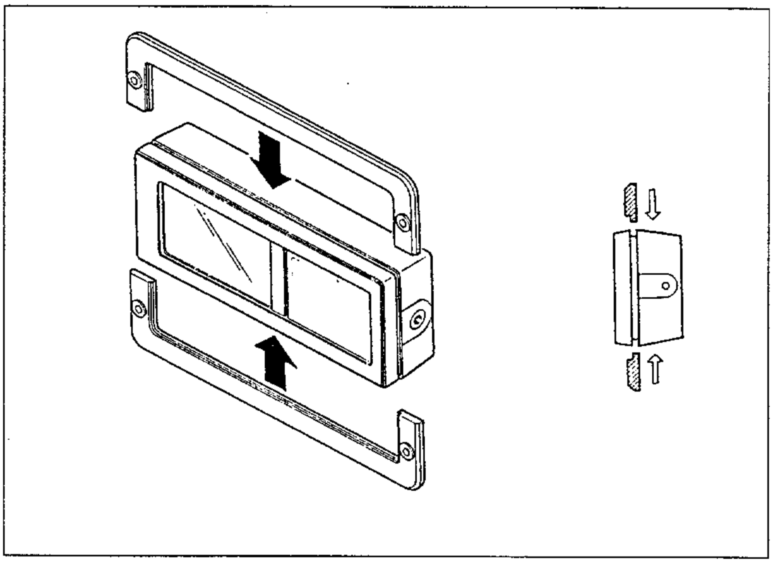


Fig.5-2

(3) Fix the unit by four screws (prepared locally).

## Cable Connection

Cable connections to the ED-2200 are made at the connectors located at the rear of the unit. Refer to the interconnection diagram on page S-1.

## Power Supply

This unit is designed to operate at any voltage between 11 and 40 Vdc. The ED-2200 can also be operated by +5V supplied from the ED-222. Refer to page S-1.

# 6. CHECK AFTER INSTALLATION (For technicians)

## Changing Depth Unit

(1) Turn on the equipment while pressing **ACK** key. The unit currently selected appears on the screen.

(2) To change the depth unit, press **ALARM [+]** key until desired unit appears.

→ M(meter) → FT(feet) → FA(fathom) → (back to M)

NOTE: Pressing **ALARM [ - ]** key changes the unit in reverse order.

(3) To restore normal operation, turn off and on the equipment.

**TIP!** The indication of the depth unit depends on the supplied depth data from the combined equipment.

| If ED-2200 is combined with ... | And selection of data format is ... | Then the depth unit on the window is ... |
|---|---|---|
| ED-222 or ED-2200 | NMEA (ED-2200) | Unit selected by the steps explained above. |
| | CIF (ED-2200) | Unit selected by ED-222. |
| Color video sounder | CIF or NMEA (Color video sounder) | Unit* selected by color video sounder. |

* If there is a unit other than M, FT or FA, the depth without unit appears.

## Changing Specification

The specification can be changed by reselecting the jumper block settings on the MAIN and SUB boards.

The specifications which can be changed are;
(1) Communication data format
(2) Alarm operation mode
(3) Power supply line ON/OFF control method
(4) Power ON/OFF control

Refer to the table below.

| Location | Items | Jumper | Settings | Operation/Remarks |
|---|---|---|---|---|
| MAIN Board (02P6139) | Data Format* | J2 | CIF | |
| | | | NMEA | |
| | Alarm Operation Mode | J3 | LOCAL | Alarm operates by alarm zone setting of ED-2200. |
| | | | REMOTE | Alarm operates by alarm data from the ED-222/color video sounder. |
| SUB Board (02P6140) | Power Supply | J5 | SHIP'S MAINS | The power is supplied from the ship's mains. |
| | | | ED-222 | The power is supplied and controlled from the ED-222. The function of PWR and OFF key is disabled. |
| | Data Format* | J6/J7 | CIF | |
| | | | NMEA | |
| | Power ON/OFF Control | J8** | LOCAL | The power switch of the ED-2200 turns the equipment on and off. |
| | | | REMOTE*** | The external breaker switch turns the equipment on and off. The function of PWR and OFF key is disabled. |

[shaded box] shows the factory setting.

* The setting for data format on each board should be the same.
** J8 setting takes effect if J5 is set to "SHIP'S MAINS".
*** Idle current flows even when the power is turned off. If you want to cut the power to the ED-2200 completely, turn off the breaker switch.

**Remarks of J3 settings (Alarm operation mode)**

1. When "LOCAL" is selected, refer to the operation instructions on pages 3 and 4.
2. When connecting with the digital depth indicator ED-222, the "REMOTE" mode is recommendable to emit alarm from both units simultaneously.

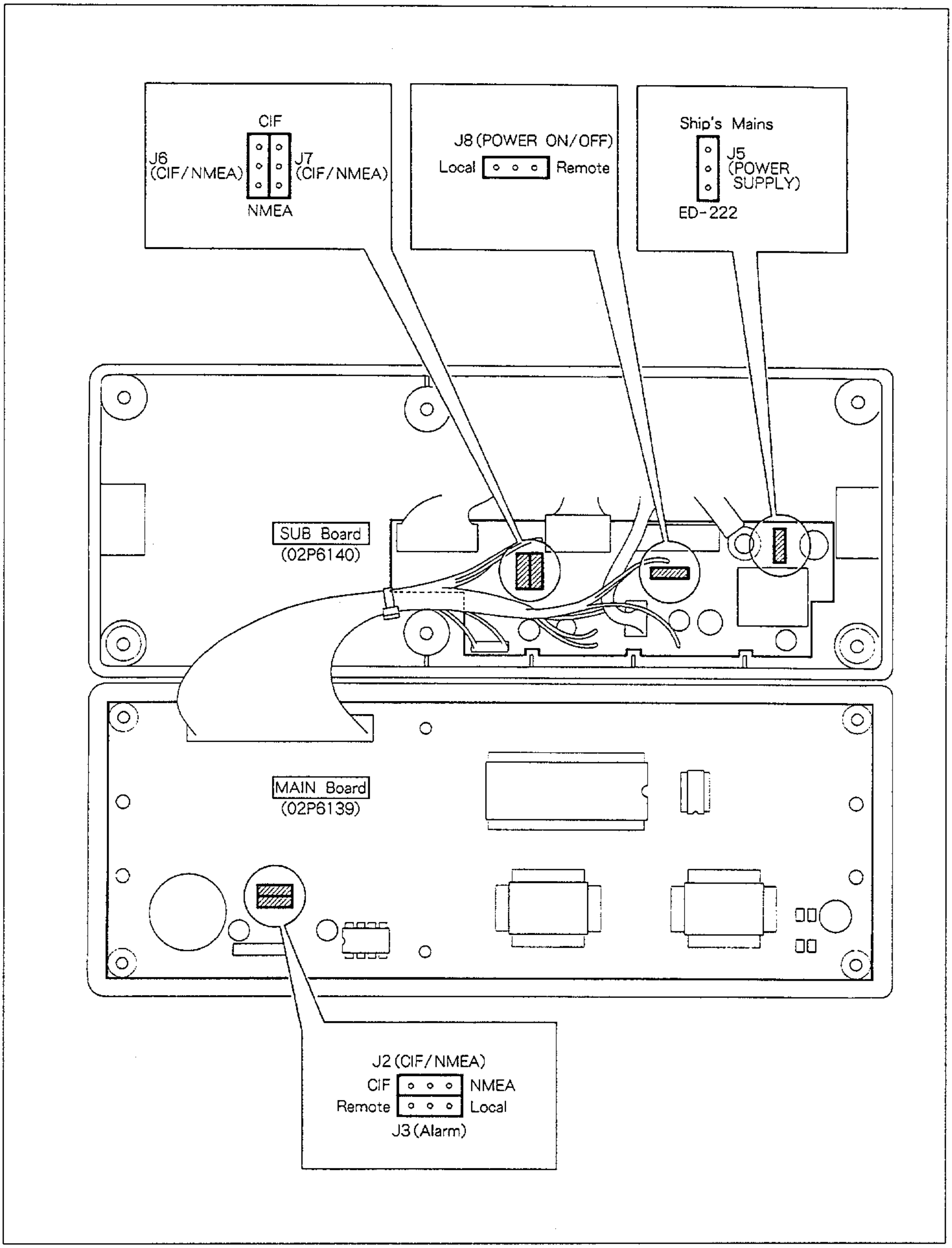



**Fig.6-1 Location of Jumper Blocks**

## Display Window Test (LCD)

Turn on the equipment while pressing **DIM** key to start the display (LCD) window test. The display is checked in the following sequence.

1) All indications blink twice. Fig.6-2 shows all indications on the window.
2) Each indication lights sequentially from top left to right. All numeral segments display from "0" to "9" in succession.

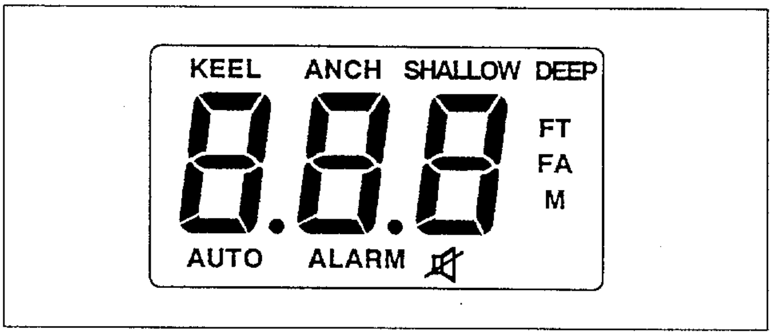



Fig.6-2

3) Test terminates, showing the settings of J2 and J3 on the MAIN board. See Fig.6-3.

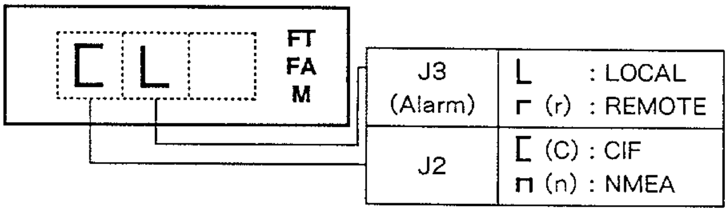



Fig. 6-3

4) Press each key switch. The right-hand digit indicates the number corresponding to the key switch as follows. (Panel key switch test)

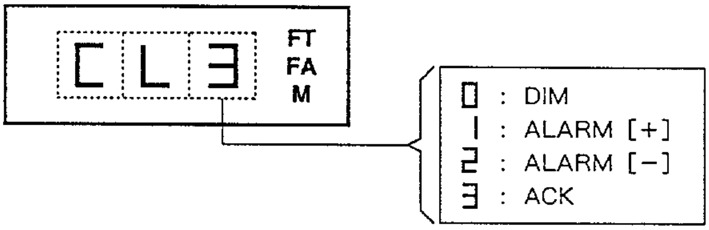



Fig. 6-4

5) To exit from the test, turn off the equipment.

# 7. SPECIFICATIONS

**1. Depth Indication**

| | |
|---|---|
| Display | 3-digit LCD-display |
| Depth Range | 0-99.9, 100-999 in Feet, Meters or Fathoms<br>Automatic digit shift |
| Depth Readings | True depth or relative to transducer position (subject to depth data from combined equipment) |
| Resolution | 0.1 (0-99.9) or 1 (100-999) in Feet, Meters or Fathoms |

**2. Alarms**

| | |
|---|---|
| Depth Alarm: | 1) Buzzer sounds when reading becomes shallower than the depth, set by control panel key, 0-999 in each unit.<br>2) Receiving the alarm signal from the digital depth indicator ED-222 or the color video sounder, alarm sounds and "AUTO ALARM" is indicated. |

| | |
|---|---|
| **3. Input/Output Data**<br>(* CIF only) | Input: Depth and alarm* (in Furuno CIF or NMEA0183 data format)<br>Output: Depth and alarm* (in Furuno CIF or NMEA0183 data format) |

**4. Environmental Conditions**

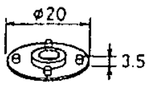
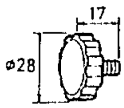
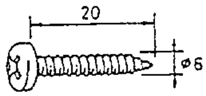
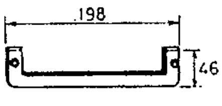
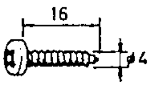
| | |
|---|---|
| Ambient Temperature | –15 to +55°C |
| Humidity | Less than 95% |
| Vibration | Less than 1G (750-3000 c.p.m.) |

| | |
|---|---|
| **5. Power Supply & Power Consumption** | 11-40VDC, less than 5W. |
| **6. Color** | Control Panel N3.0 (not changed)<br>Cabinet 2.5 GY 5/1.5 |

## STANDARD SET

| No. | Name | Type | Qty | Code Number |
|---|---|---|---|---|
| 1 | Remote Display Unit | ED-2200 | 1 | |
| 2 | Accessories | FP12-00700 | 1 | 000-014-278 |
| 3 | Installation Materials | CP12-01000 | 1 | 000-014-277 |
| 4 | Spare Parts | SP12-00700 | 1 | 000-014-276 |

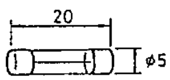
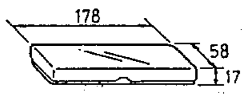
## ACCESSORIES (FP12-00700)

| No. | Name | Outline | Type | Qty | Code Number |
|---|---|---|---|---|---|
| 1 | Bracket |  | 12-003-3301-0 | 1 | 100-156-220 |
| 2 | Rubber Washer |  | 12-003-3302-0 | 2 | 100-156-230 |
| 3 | Knob Bolt |  | 12-003-3303-0 | 2 | 100-156-240 |
| 4 | Tapping Screw |  | 6x20, SUS 304 | 2 | 000-800-414 |
| 5 | Flush Mount Plate |  | 22-003-2001-1 | 2 | 100-085-621 |
| 6 | Tapping Screw |  | 4x16, SUS304 | 4 | 000-802-955 |

## INSTALLATION MATERIALS (CP12-01000)

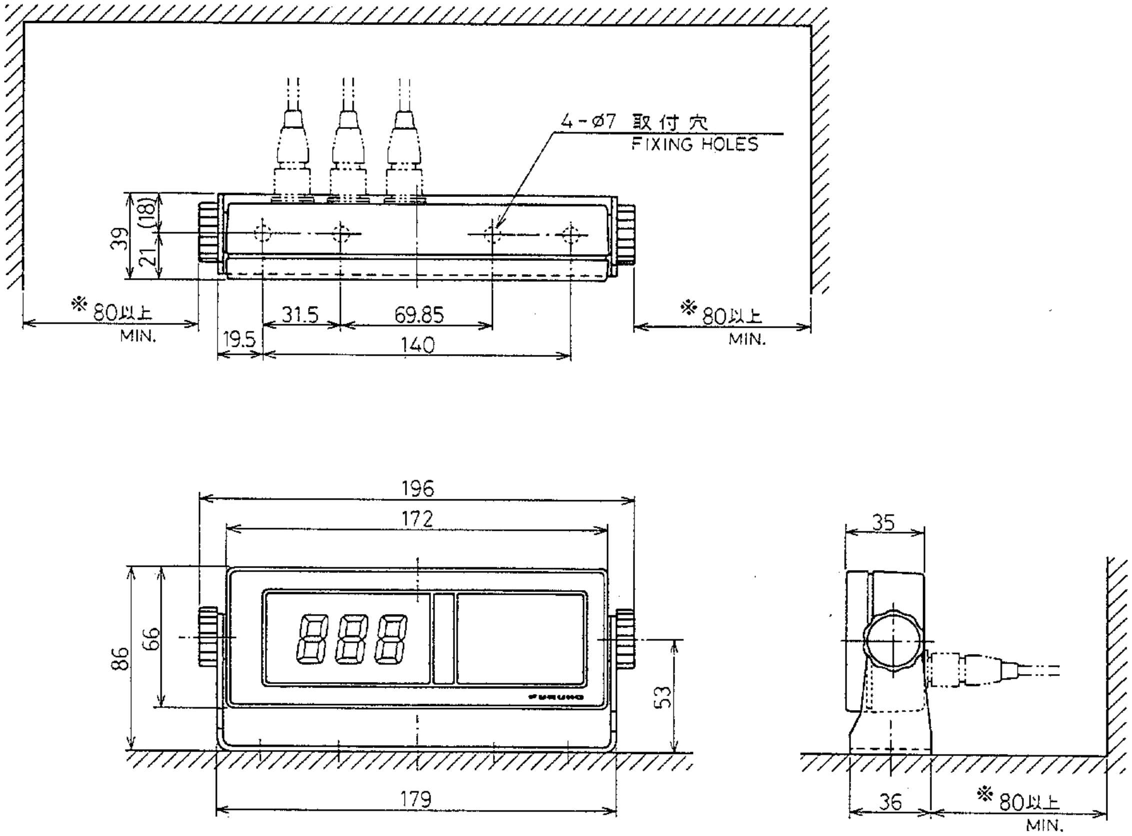
| No. | Name | Outline | Type | Qty | Code Number |
|---|---|---|---|---|---|
| 1 | Power Cable Assembly |  | 22S0019-2 (VV0.75x2C, 3m) | 1 | 000-109-000 |
| 2 | NMEA Cable |  | 22S0021-3 (EA-SA 7/0.16-4C, 5m) | 1 | 000-109-517 |

## SPARE PARTS (SP12-00700)

| No. | Name | Outline | Type | Qty | Code Number |
|---|---|---|---|---|---|
| 1 | Fuse |   | FGMLA, 0.5A 125V | 3 | 000-125-923 |
| 2 | Spare Parts Box |   | F710 | 1 | 000-831-610 |

## OPTIONAL SUPPLY

| No. | Name | Type | Code Number | Remarks |
|---|---|---|---|---|
| 1 | Dimmer Unit | MF-22L-1A | 000-069-405 | Flush mount type |
| 2 | Dimmer Unit | MF-22L-2A | 000-069-406 | Bulkhead mount type |
| 3 | Cable Assembly | 22S0022-2 | 000-109-506 | |




※:推奨サービス空間
RECOMMENDED SERVICE SPACE

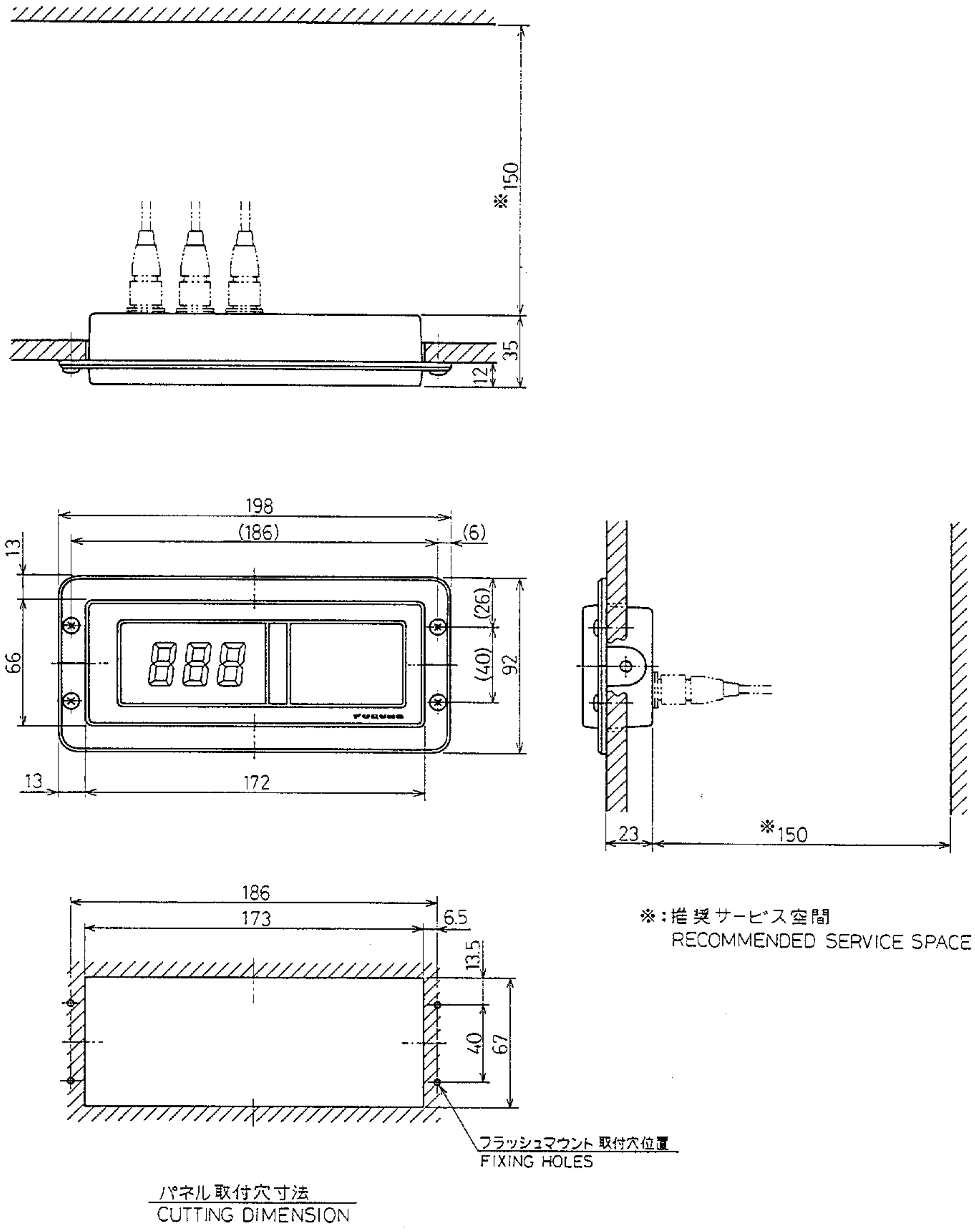
| 品番 ITEM | 品名 NAME | 材質 MATERIAL | 数量 Q'TY | 図番 DWG. NO. | 摘要 REMARKS |
|---|---|---|---|---|---|
| | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 承認 APPROVED | JUL. 8. '91 T. NAKANO | 三角法 THIRD ANGLE PROJECTION | | 名称 TITLE | リモートディスプレイ(卓上型) |
| 検図 CHECKED | JUL. 8. '91 M. USUDA | 尺度 SCALE | 1/3 | ED-2200 | REMOTE DEPTH INDICATOR (TABLE-TOP MOUNT) |
| 製図 DRAWN | JUL. 8. '91 TOMITA | 重量 WEIGHT | 0.33 kg | 図番 DWG. NO. | C2333-G02-B |

FURUNO ELECTRIC CO., LTD.

**FURUNO**

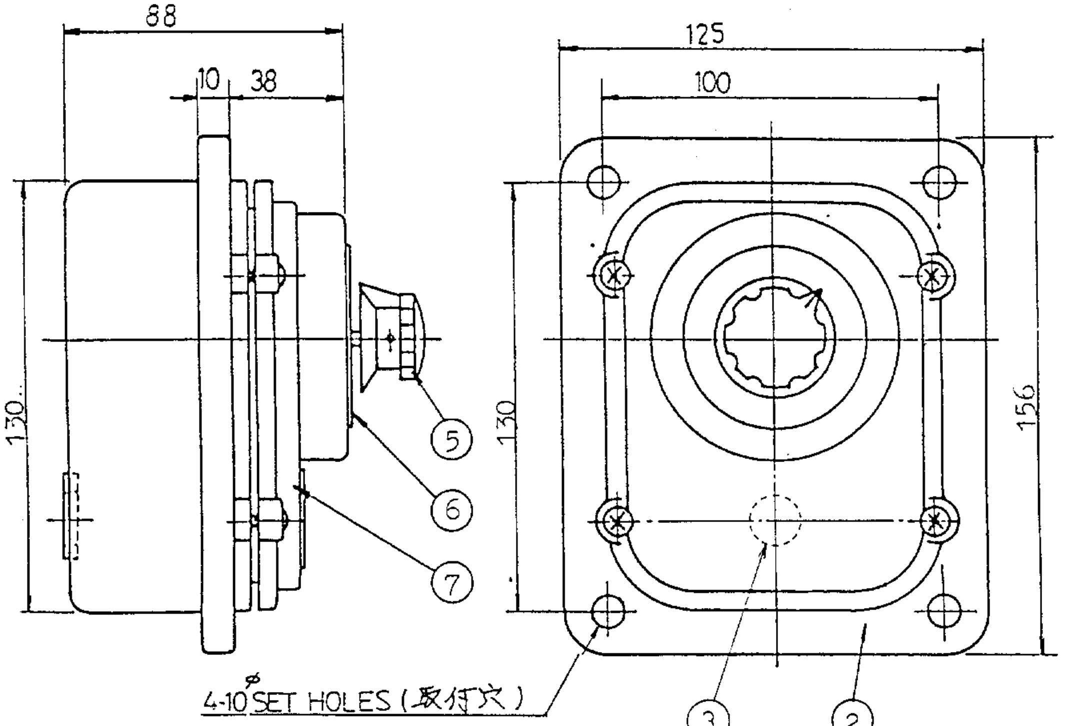
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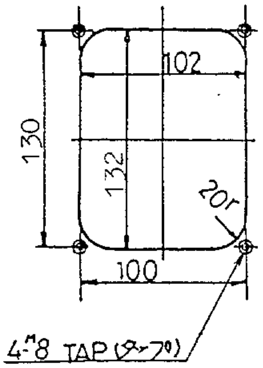

| 品番 ITEM | 品名 NAME | 材質 MATERIAL | 数量 Q'TY | 図番 DWG. NO. | 摘要 REMARKS |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| 承認 APPROVED | JUL. 8 .'91 T. NAKANO | 三角法 THIRD ANGLE PROJECTION | | 名称 TITLE | リモートディスプレイ(埋込型) |
| 検図 CHECKED | JUL. 8 .'91 M. USUDA | 尺度 SCALE | 1/3 | ED-2200 | REMOTE DEPTH INDICATOR (FLUSH MOUNT) |
| 製図 DRAWN | JUL. 8 .'91 TOMITA | 重量 WEIGHT | 0.33 kg | 図番 DWG. NO. | C2333-G01-B |

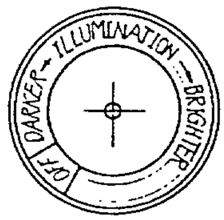
FURUNO ELECTRIC CO., LTD.




PANEL CUT (パネル取付工事図)



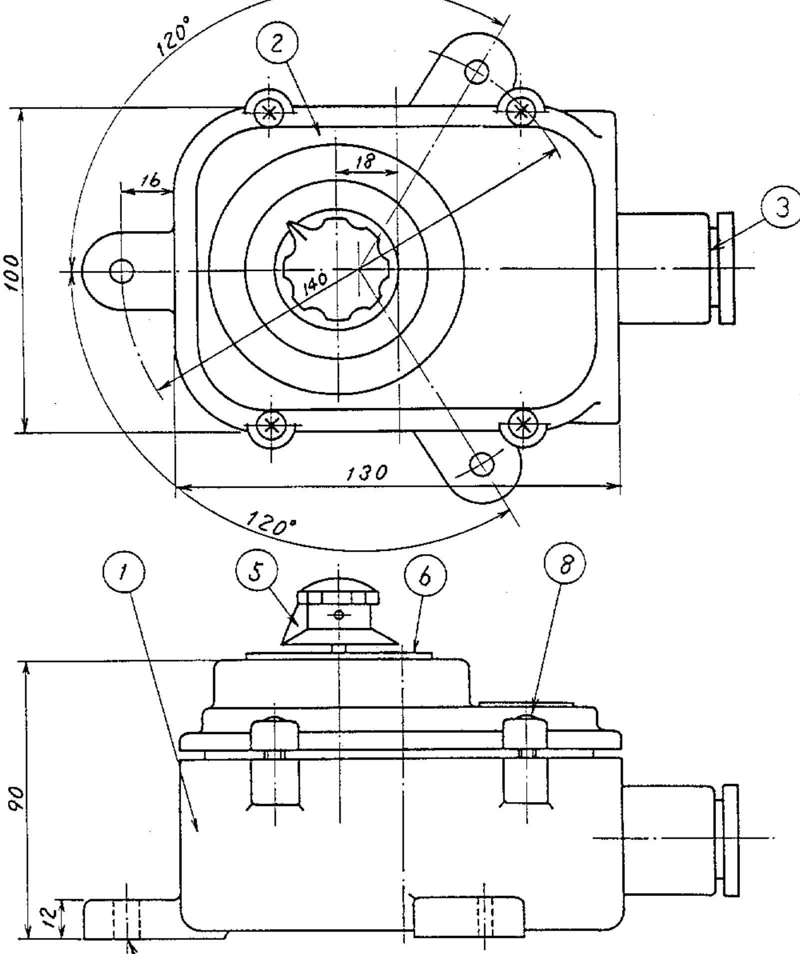

⑥ DETAILS OF NAME PLATE
(銘板詳細)



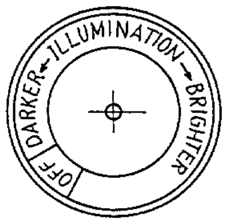

| 品番 ITEM | 品名 NAME | 材質 MATERIAL | 数量 Q'TY | 図番 DWG.NO. | 摘要 REMARKS |
|---|---|---|---|---|---|
| 7 | フタ COVER | AC7AF | 1 | | |
| 6 | 銘板 NAME PLATE | SUS | 1 | | |
| 5 | 把手 KNOB | | 1 | | |
| 4 | | | | | |
| 3 | ブッシング BUSHING | RUBBER | 1 | | φ15 |
| 2 | 本体 BODY | AC7AF | 1 | | |
| 1 | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 承認 APPROVED | JUL. 8. '91 T. NAKANO | 三角法 THIRD ANGLE PROJECTION | | 名称 TITLE | 調光器外観図 OUTLINE OF DIMMER BOX |
| 検図 CHECKED | JUL. 8. '91 M. USUDA | 尺度 SCALE | 1/2 | MF-22L-1A | 埋込型 (FLUSH MOUNT) |
| 製図 DRAWN | JUL. 8. '91 TOMITA | 重量 WEIGHT | 1.2 kg | 図番 DWG. NO. | C2333-G07-B |

FURUNO ELECTRIC CO., LTD.

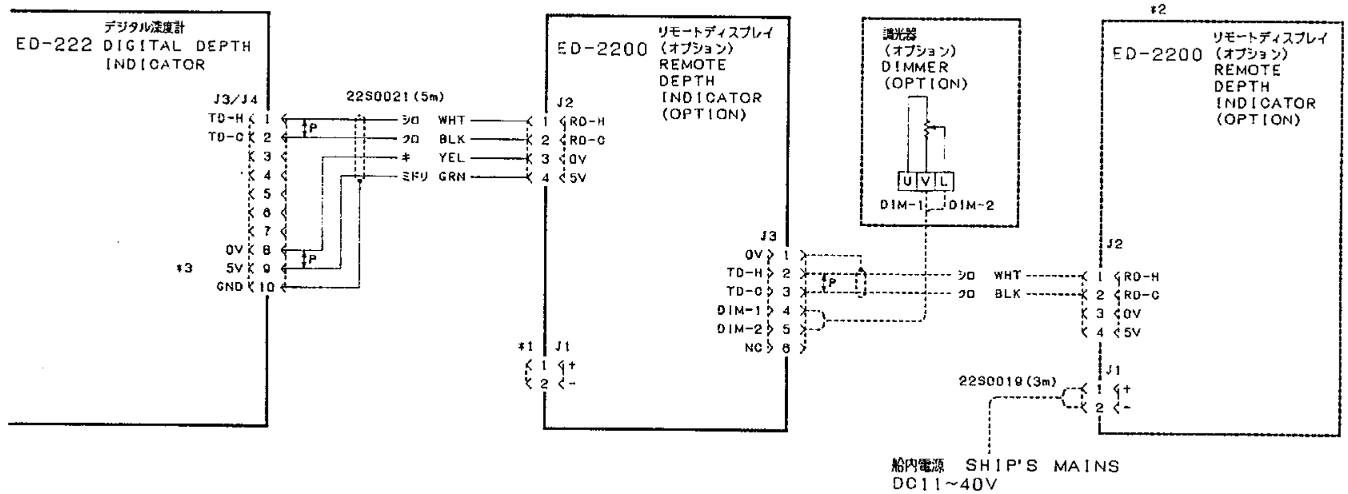



⑥ 銘板詳細
DETAIL OF NAME PLATE

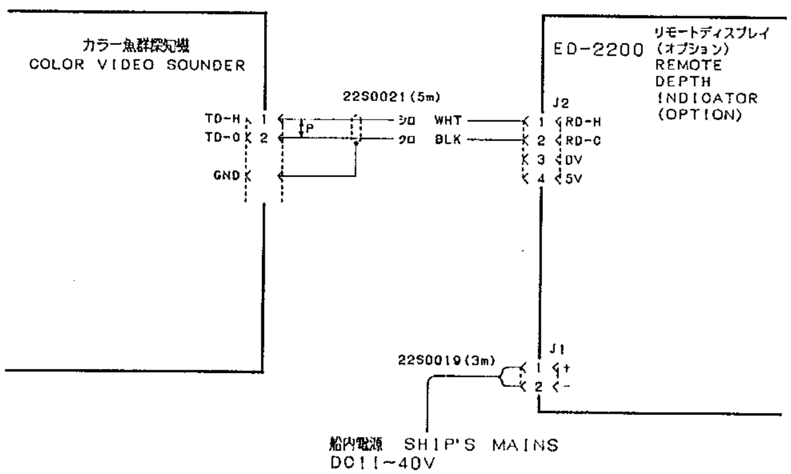



| 品番 ITEM | 品名 NAME | 材質 MATERIAL | 数量 Q'TY | 図番 DWG. NO. | 摘要 REMARKS |
|---|---|---|---|---|---|
| 8 | 取付ネジ SET SCREW | BSBM2 | 1 | | |
| 7 | | | | | |
| 6 | 銘板 NAME PLATE | SUS | 1 | | |
| 5 | 把手 KNOB | AC7AF | 1 | | |
| 4 | | | | | |
| 3 | グランド GLAND | AC7AF | 1 | | |
| 2 | フタ COVER | AC7AF | 1 | | |
| 1 | 体 BODY | AC7AF | 1 | | |

| | | | | | |
|---|---|---|---|---|---|
| 承認 APPROVED | JUL. 8. '91 T. NAKANO | 三角法 THIRD ANGLE PROJECTION | | 名称 TITLE MF-22L-2A | 調光器外観図 OUTLINE OF DIMMER BOX 壁掛型 (BULKHEAD MOUNT) |
| 検図 CHECKED | JUL. 8. '91 M. USUDA | 尺度 SCALE | 1/2 | | |
| 製図 DRAWN | JUL. 8. '91 TOMITA | 重量 WEIGHT | 1.3 kg | 図番 DWG. NO. | C2333-G06-B |




カラー魚群探知機に接続する場合



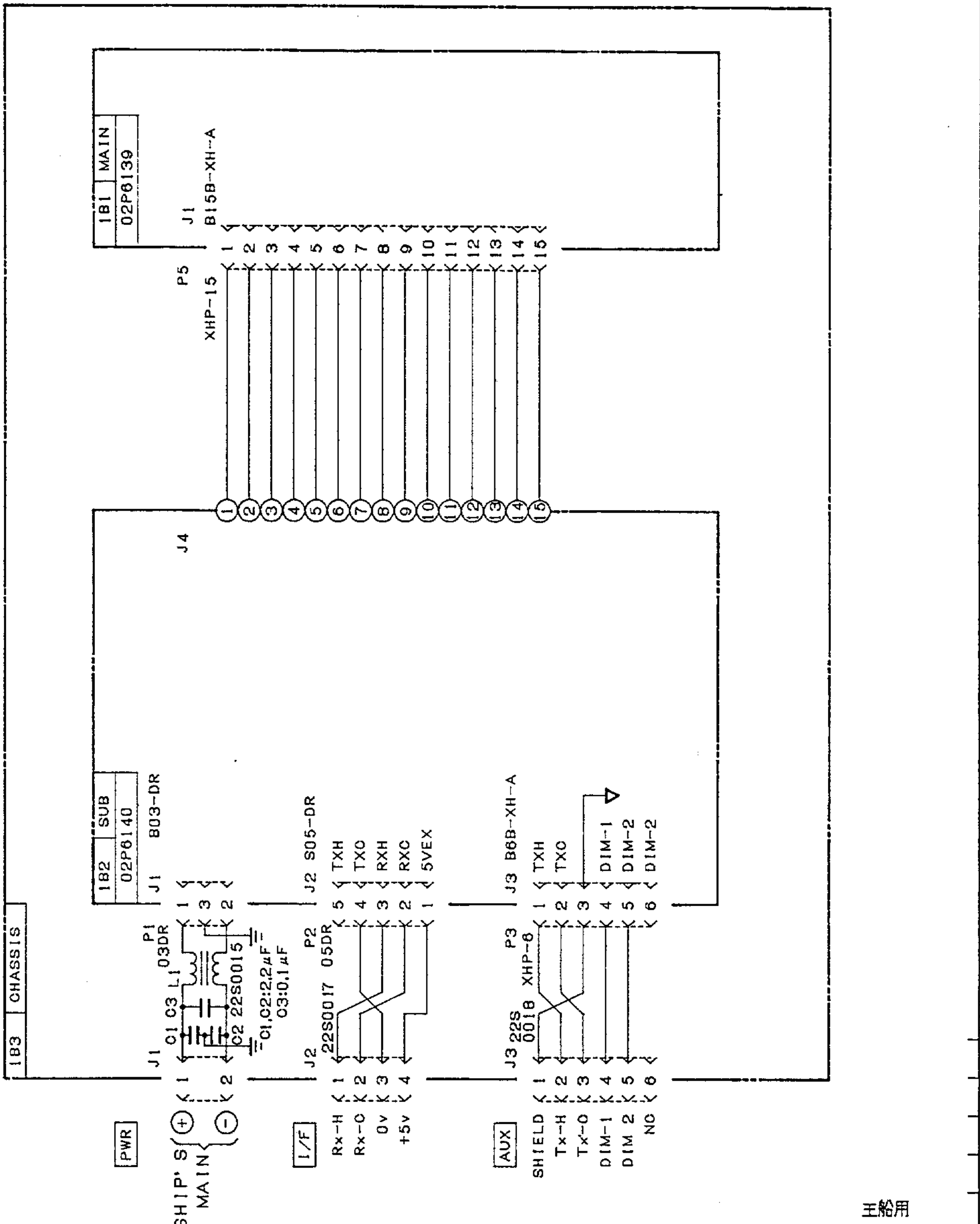

*1: ED-222のJ3又はJ4に直接接続するED-2200はJ3/J4の5Vより電源の供給を受けるので、J1に船内電源を接続しなくてもよい。
WHEN ED-2200 IS CONNECTED TO J3/J4 OF ED-222, CONNECTION OF SHIP'S MAINS TO ED-2200 IS UNNECESSARY.

*2: ED-2200は縦続で何台でも接続できる。但し、縦続の2台目以降は船内電源を接続すること。
ED-2200'S CAN BE CONNECTED IN SERIES AS MANY AS YOU WANT, PROVIDED THAT SHIP'S MAINS ARE SUPPLIED TO THEM EXCEPT FOR THE FIRST ONE.

*3: 5Vを出力するには内部のディップスイッチ(02P6133のS2)をONにする。
TURN ON DIP SWITCH S2 ON 02P6133 BOARD TO OUTPUT 5V.

| | | | |
|---|---|---|---|
| 承認 APPROVED | OCT·23·'91 TAKAKAGE | 名称 TITLE | 相互結線図 ED-2200 INTERCONNECTION DIAGRAM |
| 検図 CHECKED | OCT·23·'91 M.ISHIDA | | |
| 製図 DRAWN | OCT·23·'91 TOMITA | 図番 DWG. NO. | C2333-C03-B |

FURUNO ELECTRIC CO., LTD.




| 品番 ITEM | 品名 NAME | 材質 MATERIAL | 数量 Q'TY | 図番 DWG. NO. | 摘要 REMARKS |
|---|---|---|---|---|---|

| | | | |
|---|---|---|---|
| 承認 APPROVED | JAN·29·'92 T.NAKAUC | 三角法 THIRD ANGLE PROJECTION | 名称 TITLE: ED-2200 リモートディスプレイ REMOTE DEPTH INDICATOR |
| 検図 CHECKED | JAN 29·'92 M. USUDA | 尺度 SCALE | |
| 製図 DRAWN | JAN·29·'92 TOMITA | 重量 WEIGHT kg | 図番 DWG. NO. C2333-K05-C |

FURUNO ELECTRIC CO., LTD.